Changes in the Measurement of Fair Value: Implications for Accounting Earnings

Abstract

With the FASB's issue of staff position papers in 2009 and the relaxation of how fair value standards are applied, there has been a change in the practice of how fair value is measured. Since the FASB staff position papers in 2009, fair value measurement by financial institutions has increasingly relied on managerial assumptions. This study examines the impact of this change on the quality of earnings. Consistent with attribute substitution theory that emphasises reliability over relevance, we find that an apparent increase in managerial discretion in fair value measurement is associated with a higher probability of earnings management and lower earnings informativeness. The results indicate that allowing more managerial discretion in fair value measurement adversely affected the quality of financial reporting. Our study highlights the issue of reliable measurement in the debate among academics and practitioners of increasing the use of fair value accounting.

1. Introduction

Drawing upon evidence from the case of Enron, Gwilliam and Jackson (2008) argue that the unreliability of mark to market valuations originates from managers' desire to manipulate earnings. More recently there has been a change in the practice of how fair value is measured after the Financial Accounting Standard Board (FASB)'s relaxation of the application of standards on fair value measurement (FASB 2009a, FASB 2009b). Fair value measurement increasingly relies on managerial assumptions, even including cases where a market price exists. Such a change has been subject to much debate among regulators, bank executives and investors (Bushman and Landsman 2010). Supporters of the change argue that giving managers more discretion in fair value measurement will convey more relevant information. To the contrary, critics argue that greater flexibility in fair value measurement will be opportunistically exploited by managers and will adversely affect the reliability of fair value measurement.

While prior research documents the existence of potential manipulation of fair value estimates (Huizinga and Laeven 2009; Dechow et al. 2010b; Fiecher and Meyer 2010; Vyas 2010), there is relatively little empirical evidence specifically examining whether additional managerial discretion allowed by accounting standards on fair value measurement will, on average,

reveal more about a firm's economic fundamentals or degrade the quality of earnings.[1]

This study extends the emerging literature on managerial discretion in fair value estimates to explore the question: "What are the effects of additional discretion in fair value measurement allowed by changes in accounting standards on banks' earnings?" Specifically, this study uses the relaxation by the FASB of the application of fair value standards for banks (FASB 2009a, 2009b) to examine the relation between the change of fair value measurement in practice and the quality of banks' earnings.

In a move changing the standards on fair value measurement to enhance the relevance of financial reporting, the FASB issued three FASB Staff Position papers (FSPs) in April 2009 that effectively granted managers more flexibility to measure fair value assets at level 2 and 3 even where markets for the securities existed.[2] Bushman and Landsman (2010, page 271) state that: "both the FASB and IASB bent to political pressure and generally allowed banks more flexibility in applying their fair value accounting." This event provides an opportunity to examine the effects of increased managerial discretion in fair value measurement on banks' earnings quality.

In examining the quality of earnings, we focus on two attributes: reliability and relevance. These are two qualities of financial information used by both the Financial Accounting Standard Board (FASB) and the

[1] See the debate between Dechow et al. (2010b) and Barth and Taylor (2010) on whether fair value estimates of securitization gains are manipulated by managers. Barth and Taylor (2010) show that the evidence on this issue is inconclusive and further investigation is needed.

[2] A *Wall Street Journal* article estimates that the change in fair value accounting boosted banks' earnings by 7% on average in Q2 2009 (Pulliam and Mcginty 2009).

International Accounting Standard Board (IASB) in standard setting. To examine the reliability and relevance of earnings, consistent with the literature (eg., Dechow et al. 2010a), we examine the probability of earnings management and the informativeness of earnings as reflected in investors' response to earnings announcements. Using a sample of U.S. bank holding companies with fair value hierarchy disclosures, we find that an increase in measurement discretion in fair value increases the probability of meeting or beating analysts' forecasts and the effect occurs during the period after the relaxation of fair value rules. We also find that an increase in discretionary fair value assets negatively impacts the earnings response coefficient (*ERC*) and that the effect primarily comes from the period after the relaxation of fair value standards.

This study reveals that higher managerial discretion afforded from accounting standards is opportunistically exploited by managers in practice and will not enhance the relevance of financial reporting. Our results are consistent with the attribute substitution theory arguing relevance is a less accessible attribute than reliability in fair value (Kahneman and Frederick 2002; Kadous et al. 2012). When users of financial reports judge the source of information as unreliable, they will not treat the information as useful or relevant. In other words, fair value becomes less informative of value when it is not reliably measured (Hernández 2004; Penman 2007). By providing empirical evidence on the effects of a recent change in practice of fair value measurement, we

caution the promotion of relevance in the sacrifice of reliability in financial reporting.

This study is organised as follows. Section 2 provides background on the institutional setting. Section 3 reviews prior research related to managerial discretion in fair value measurement and the quality of capital, and develops hypotheses. Section 4 and 5 describe the model and sample. Section 6 presents the empirical results. Section 7 discusses sensitivity analyses. Section 8 concludes the paper.

2. Background

The use of fair value estimates can provide timely information about the changes in economic conditions and can serve as an early warning of adverse market conditions.[3] Fair values are determined and classified using three different approaches. Level 1 uses *unadjusted* quoted market price, however, level 2 and 3 fair value estimates use inputs and assumptions determined by managers. This hierarchy can provide timely information on how economic conditions may impact value, but also allows significant management discretion in measurement and classification.[4]

[3] For example, the CEO of Goldman Sachs, Lloyd Blankfein, wrote in the *Financial Times*: "At Goldman Sachs, we calculate the fair value of our positions every day, because we would not know how to assess or manage risk if market prices were not reflected on our books. This approach provides an essential early warning system that is critical for risk managers and regulators" ('To avoid crises, we need more transparency', FT.com, October 2009).

[4] A representative example of an acknowledgement by management of the flexibility in measurement afforded by the choice of assumptions is: "The methods to estimate fair value may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values." JP Morgan Chase 2010 10-K, page 157.

FAS 157 (FASB 2006) originally did not allow fair value to deviate from market price when a quoted market price exists. To avoid recognising large impairment losses under FAS 157, banks lobbied law makers to ease the fair value rules and to give managers more flexibility in valuing assets using internal models (Pulliam and McGinty 2009). Under political pressure from the Congress (Bushman and Landsman 2010), the FASB issued three Staff Positions (FSPs) in April 2009 that gave managers more discretion in determining whether to use market price or an internal model to recognise the fair value of assets and liabilities. For example, FASB Staff Position No. FAS 157-4 (FASB 2009a) gives managers more power to determine when the market is inactive and whether a transaction is not orderly. If the market price is judged not to be the result of orderly sales, managers can make adjustments to the market price using other valuation techniques, including internally developed models.

When managers believe that the market is illiquid and the market price does not reflect fundamental values of the assets, managers enjoy the flexibility not to use the quoted market price, i.e. level 1, as fair value. Instead managers can choose to use level 2 and 3 inputs to estimate fair value. Level 2 inputs are derived from prices of similar assets with additional adjustments deemed necessary by managers[5]. Level 3 inputs are derived from a firm's

[5] In the case of level 2 estimates, managers were given the discretion to adjust the prices indicated by market indices after the relaxation of fair value rules. In the case of level 3 estimates, managers are given more discretion to determine the extent of market illiquidity and hence the extent as well as the magnitude of internal model inputs.

internally developed models. The more fair value assets can be classified at level 2 and 3, the more managerial discretion is exercisable.

After the relaxation of fair value rules, managers are expected to strategically exploit the additional flexibility in fair value measurement. Laux and Leuz (2010) document that bank holding companies transferred billions of dollars of assets measured at fair value from level 1 into level 3 during the financial crisis to avoid recognising impairments. For earnings management purposes, greater managerial discretion in determining fair value increases the opportunities to manage earnings, which will weaken earnings informativeness.

3. Prior Research and Hypotheses

Hernández (2004) argues that if fair value is not reliably measured, such as when the fair value is based on valuation techniques using the entity's own assumptions and estimates, then fair value will be less informative of future cash flows. Similarly, the commentary of Penman (2007) cautions against the adoption of full fair value accounting when managers are naturally biased toward optimistic assessment of their business plans. Accounting's role as counterweight is undermined by management's optimism when hypothetical fair value based on managerial assumptions is admitted into the accounting system. Through the case of Enron, Gwilliam and Jackson (2008) show that fair value measurement suffers from unreliable estimates and managerial desires to avoid reporting mark-to-market losses. Based on the residual earnings valuation model, Beisland (2013) uses financial expenses to

demonstrate that where fair value cannot be reliably obtained, fair value will not be able to assist equity investors in the firm valuation process.

Emphasising the issue of fair value measurement for banks, Heilpern et al. (2009) show that fair value measurement has significant implications for the banking industry where financial instruments and loan loss provisions are recorded at fair value. Fair value adjustments are volatile and can quickly undermine earnings and the equity cushion in bank balance sheets. Fair value is therefore considered as a possible driver of the credit crunch and the banking crisis. However, Herrmann et al. (2006) argue that fair value is superior to historical cost in measuring property, plant and equipment in all the qualitative characteristics other than verifiability. Such qualitative characteristics include predictive value, feedback value, timeliness, neutrality, comparability and consistency.

More specifically related to managerial discretion in fair value measurement, previous research has found that changes in values of discretionary fair value assets, such as securitized loans and mortgage backed securities (MBS), are related to income smoothing and delay in recognising impairment (Huizinga and Laeven 2009; Dechow et al. 2010b; Fiecher and Meyer 2010; Vyas 2010). Bischof et al. (2011) examine the consequences of banks reclassifying fair value assets to historical cost, allowed by the amendment of IAS 39, and find that the reclassification is associated with regulatory capital arbitrage. Taken as a whole, the literature suggests that

managers utilise accounting discretion in fair value measurement opportunistically.

Although prior research shows that fair value hierarchy disclosures are utilised opportunistically, the effects of greater availability of fair value discretion on banks' earnings have not been specifically documented. This study directly examines the relation between managerial discretion in fair value measurement and banks' earnings, and the changes in the relation around the increase in discretion allowed by the FASB in 2009. The relaxation of fair value rules in 2009 gave managers more discretion in choosing to use level 2 and 3 instead of level 1 to measure the fair value of assets. As greater extent of managerial estimations exists in level 2 and 3 measurements, there is greater room to delay recognising fair value losses to manage earnings. After the relaxation of fair value standards, additional flexibility in fair value measurement allowed by accounting standards is expected to increase the opportunities to manage earnings. This leads to the first hypothesis:

> **H1**: Managerial discretion in fair value measurement is more positively associated with earnings management after the relaxation of fair value rules in 2009 than prior to the relaxation.

Managerial discretion is of course difficult to measure. Following previous research we use the amount of fair value assets disclosed at level 2

and 3 in the fair value hierarchy (i.e. the discretionary fair value assets)[6] to indicate the level of potential managerial discretion in fair value measurement. Managers are expected to disclose relatively more assets at level 2 and 3 to avoid directly recognising losses in earnings when market conditions are expected to deteriorate.[7]

If greater managerial discretion in estimating fair value leads to a greater extent of earnings management, then earnings would become less reliable. Traditional view on fair value does not differentiate between reliability and relevance attributes of fair value measurement and pays little attention to the relation between these two attributes (Barth et al. 2001; Kadous et al. 2012). As a development of the traditional view, attribute substitution theory considers that individuals substitute an evaluation of a less accessible attribute with a more accessible one. The accessibility of an attribute relates to the difficulty to conceptualise and the frequency to use the attribute (Kahneman and Frederick 2002). Reliability is a basic property of fair value measurement that users understand well. On the other hand, relevance is decision specific and requires difficult analysis (Kadous et al. 2012). Therefore when investors are aware that fair value measurement is less reliable after the

[6] It is assumed that there is greater management flexibility when valuing level 2 and 3 securities relative to level 1 where an observable market price is typically available. While this assumption has been used in prior research it must be acknowledged that the types of securities held also vary between levels 1, 2 and 3 and, as with previous research, the results must be interpreted with respect to this potential confounding of type of securities held and the method for estimating the discretionary component of the fair value of the securities held.

[7] For example, level 3 fair value assets of some bank holding companies, such as Merrill Lynch, increased by as much as 70 percent compared with the pre-crisis balance. In this way, banks were able to limit the negative effect of declines in fair value on net income or owners' equity (Laux and Leuz 2009). Marking-to-model at level 3 allows declines in current value to be considered to be temporary and helps avoid recognising losses.

change of practice, they will treat earnings, which are affected by changes in fair value, as less useful or relevant. This argument echoes Hernández (2004) and Penman (2007), suggesting that earnings become less credible to investors and less informative of cash flows in the presence of greater managerial discretion in fair value measurement. Consequently more managerial discretion in fair value measurement after the relaxation of fair value standards is expected to lead to a lower earnings response coefficient. This leads to the second hypothesis:

> **H2**: Managerial discretion in fair value measurement more negatively impacts the earnings response coefficient after the relaxation of fair value rules in 2009 than prior to the relaxation.

4. Research Design

4.1. Test for Earnings Management

To provide evidence on H1, we test whether greater managerial discretion in fair value measurement is associated with a higher probability of earnings management. We use an increase in discretionary fair value assets (level 2 and 3 fair value assets) to proxy for greater managerial discretion in fair value measurement. Intuitively the more fair value assets can be classified at level 2 and 3, the more managerial discretion is exercisable. Dechow et al. (2010a) show that meeting or beating analysts' forecasts by a small amount provides the most consistent evidence on earnings management. Therefore we

examine the relation between increases in discretionary fair value assets and the probability of meeting or beating analysts' forecasts, adopting an approach similar to Phillips et al. (2003) and Ayers et al. (2006).

In order to make use of the panel structure of the dataset, we estimate a fixed effect Logit model. We also include indicator variables for years in the fixed effect Logit model to account for the yearly changes experienced by all banks. The model is specified as below:

$$\begin{aligned} EM_q = {} & \gamma_0 + \gamma_1 POST + \gamma_2 \Delta DFV_q + \gamma_3 \Delta DFV_q * POST \\ & + \gamma_4 ULLP_q + \gamma_5 \Delta CFO_q + \gamma_6 SIZE_{q-1} + \gamma_7 BM_{q-1} + \gamma_8 DISPERS_q \\ & + \gamma_9 NUMEST_q + \gamma_{10} CHGINC_q + \gamma_{11} PERSIST_q + \gamma_{12} CR1_q + \gamma_{13} CR_q \\ & + firmfixedeffect + yearfixedeffect + \varepsilon_q \end{aligned} \quad (1)$$

Where:

EM	=	1 if bank *i*'s quarter q analysts' earnings forecast error is from zero to 1 cent per share, and 0 otherwise. Analyst forecast error is defined as actual earnings per share as reported by I/B/E/S less the median of the last analyst forecasts after the previous quarter's earnings announcement and before the current quarter's earnings announcement;
POST	=	indicator variable equal to 1 if the bank-quarter observation occurs during the post relaxation period of fair value rule, and 0 otherwise;
ΔDFV	=	indicator variable equal to 1 if the discretionary fair value assets increased from quarter q-1 to quarter q, and 0 otherwise; discretionary fair value assets are defined as the sum of fair value assets measured at level 2 and 3;
ULLP	=	unexpected loan loss provisions, estimated following the procedures in Wahlen (1994);
ΔCFO	=	change in bank *i*'s cash flows from continuing operations from q-1 to q, scaled by total assets at the beginning of quarter q ;
SIZE	=	size of the bank, estimated as the natural log of total assets;
BM	=	market to book ratio, estimated as the book value of equity over the market value of equity;
DISPERS	=	analyst forecast dispersion, measured as the standard deviation of analyst earnings forecast;
NUMEST	=	analyst coverage, measured as the number of analysts covering the bank;

CHGINC	=	change in earnings, estimated as the change in bank *i*'s earnings per share from quarter q-1 to quarter q deflated by the bank's share price at the beginning of quarter q;
PERSIST	=	earnings persistence, measured as an indicator variable equal to 1 if the bank is within middle three quintiles of the distribution of *CHGINC* and 0 otherwise;
CR1	=	tier 1 capital ratio;
CR	=	total capital ratio;
q	=	time subscript for quarter q.

EM is an indicator of earnings management, as meeting or beating analysts' forecasts generates positive equity returns and there are an unproportionally large number of companies meeting or beating analyst forecast by just 1 cent (Burgstahler and Dichev 1997; Degeorge et al. 1999).

Discretionary fair value assets are defined as the sum of level 2 and 3 fair value assets, as level 2 and 3 fair value assets are measured with managerial discretions (FASB 2006, 2009a). An increase in the amount of discretionary fair value assets (*ΔDFV*) indicates more discretion that can be exerted by managers in fair value measurement. With more fair value discretion, managers could avoid recognising losses into earnings to meet or beat analysts' forecasts. Therefore the coefficient on *ΔDFV* is predicted to be positive, indicating that the probability of earnings management to meet or beat analyst forecast rises with an increase of managerial discretion in fair value measurement. Interacting *POST* with *ΔDFV* shows the effect of the relaxation of accounting rules on the association between managerial discretion and earnings management. The coefficient on *POST***ΔDFV* is expected to be positive, indicating higher probability of meeting or beating analyst forecast after the relaxation of fair value rules.

We include a series of control variables which have been suggested to be related with meeting or beating analysts' forecasts. Wahlen (1994) argues that abnormal loan loss provisions (*ULLP*) is an appropriate measure of a bank's abnormal accruals because loan loss provisions represent the largest accrual for banks. Higher *ULLP* indicates better performance (Wahlen 1994; Liu et al. 1997) and should reduce the need to manage earnings. *ΔCFO* is the change in operating cash flows. Increases in cash flows reflect better current performance and lead to less need to manage earnings (Phillips et al. 2003). We include bank size (*SIZE*), analyst coverage (*NUMEST*) and analyst forecast dispersion (*DISPERS*) to control for cross-sectional differences in the information environment that may explain variations in forecast accuracy (Payne 2008; Davis et al. 2009). We include the book to market ratio (*BM*), which controls for the future growth. High-growth firms more likely to manage earnings to meet target as their share price is more sensitive to missing analyst forecasts (McVay et al. 2006). Change in earnings (*CHGINC*) and earnings persistence (*PERSIST*) are included because greater changes and less persistence of earnings are more difficult to forecast (Payne 2008). We also include tier 1 and total capital ratios. Kanagaretnam et al. (2010) show that both tier 1 and total capital adequacy ratios are related with banks' earnings management as higher capital adequacy suggests better performance and easiness to meet or beat analysts' forecasts. Finally, we choose between a fixed effect model and a random effect model for this dataset, using the Hausman test to test the null hypothesis that the coefficients estimated by the random

effect estimator are the same as the ones estimated by the fixed effect estimator (Hausman 1978).

4.2. Test for Earnings Informativeness

To provide evidence on H2, we test whether greater managerial discretion in fair value measurement impacts on earnings informativeness. Similar to the test of H1, we use an increase of discretionary fair value assets (level 2 and 3 fair value assets) to proxy for greater managerial discretion in fair value measurement. Following prior research (eg., Altamuro et al. 2005; Dechow et al. 2010a), we use the earnings response coefficient (*ERC*) as an indicator of earnings informativeness. The assumption is that if managerial discretion in fair value distorts the informativeness of earnings then the equity return for a given level of unexpected earnings should be lower. To test for the potential impact of greater managerial discretion in fair value measurement on earnings informativeness, we adopt an approach similar to Altamuro et al. (2005) and estimate a short-window *ERC* model to test the impact of an increase of discretionary fair value assets on *ERC*.

In order to make use of the panel structure of the dataset, we estimate a model with firm fixed effects. We include year indicator variables in the fixed effect Logit model to account for the yearly changes experienced by all banks. We choose between a fixed effect model and a random effect specification for this dataset based upon the Hausman test (Hausman 1978). The model is specified below:

$$CAR_t = \lambda_0 + \lambda_1 POST + \lambda_2 \Delta E_q + \lambda_3 \Delta DFV_q + \lambda_4 \Delta E_q * POST + \lambda_5 \Delta E_q * \Delta DFV_q + \lambda_6 \Delta E_q * \Delta DFV_q * POST + firmfixedeffect + yearfixedeffect + \varepsilon_q \quad (2)$$

Where:

CAR	=	cumulative market-adjusted returns (raw return minus the value-weighted market index), inclusive of dividends and other distributions computed over the three-day window surrounding the earnings announcement beginning one day before and one day after the quarter earnings announcement;
POST	=	indicator variable equal to 1 if the bank-quarter observation occurs during the post relaxation period of fair value rule, and 0 otherwise;
ΔE	=	unexpected earnings, measured as the seasonally adjusted change in net income for bank *i*, scaled by end-of-period shares outstanding;
ΔDFV	=	indicator variable equal to 1 if the discretionary fair value assets increased from quarter q-1 to quarter q, and 0 otherwise; discretionary fair value assets are defined as the sum of fair value assets measured at level 2 and 3;
q	=	time subscript for quarter q.

CAR is the three day cumulative market-adjusted stock returns around the earnings announcement. Similar to Altamuro et al. (2005), *ΔE* is the unexpected earnings, measured as the seasonally adjusted changes in quarterly earnings. *ΔDFV* is an indicator variable equals to 1 if the amount of discretionary fair value assets increases from last quarter and 0 otherwise. The coefficients on *ΔDFV*, *ΔE*ΔDFV* and *ΔE*ΔDFV*POST* are expected to be negative, indicating greater managerial discretion in fair value measurement

negatively impacts earnings informativeness and the relaxation of fair value rule intensifies such negative impacts. We include year fixed effects to account for the yearly changes experienced by all banks.

5. Sample

5.1. Sample Selection

While fair value hierarchy disclosures are mandatory for all firms, we focus on the banking industry for several reasons. First, the estimation of fair value is a crucial issue for the adequacy of banks' regulatory capital because impairment losses can have substantial impacts on the calculations of the capital ratios (Pulliam and McGinty 2009). Second, the relaxation of fair value rules is considered to be a direct result of bank lobbying and is considered to have direct impacts on boosting banks' earnings and capital adequacy (Bushman and Landsman 2010). Third, as banks operate in a highly regulated industry, their fair value assets and measurements are more homogenous than firms in other industries. Fair value hierarchy disclosure requirements under FAS 157 were adopted by most banks from the first quarter of 2007. Therefore the sample period starts from the first quarter of 2007 until the third quarter of 2011 (inclusive).

The initial sample for the earnings management test (hereafter *EM* test) includes all the U.S. bank holding companies in Bank Compustat with non-missing values for fair value hierarchy disclosures (level 1, 2 and 3). There are 7,306 bank quarter observations available from Bank Compustat. The banks' fair value hierarchy disclosure data is then merged with I/B/E/S using official

tickers, requiring non-missing values of analysts' median earnings forecasts before the earnings announcement date. Non-missing values of non-performing loan, loan loss provisions and loan loss allowances are further required to estimate the abnormal loan loss provisions. The final sample for the *EM* test has 3,431 bank quarter observations for 394 banks over 19 quarters.

The sample for the earnings response coefficient test (hereafter *ERC* test) also starts from all available observations of fair value hierarchy disclosures in Bank Compustat. The data is then merged with CRSP using "permno" codes. The test requires non-missing values of daily stock returns one day before, one day after and on the earnings announcement date. If the date occurs on a public holiday, then the next closest available observation of daily stock return is used. Merging Bank Compusat and CRSP yields 4,148 earnings announcement observations for the sample used for the *ERC* test.

5.2. Sample Characteristics

Table 1 summarises the characteristics of interest before and after the relaxation of fair value standards.[8] The mean and median values of level 2 and 3 assets (*Level23*) significantly increased after the relaxation of fair value rules, while the mean and median values of level 1 assets (*Level1*) decreased. Without the relaxation of fair value standards, banks are expected to record large impairment losses related to fair value assets. Table 1 however shows

[8] The tests in Table 1 include all bank quarter observations with non-missing data for disclosures of fair value assets (*Level23*), level 1 fair value assets (*Level1*), net income before extraordinary items (*Inc*), natural log of total assets (*Size*), market value of equity (*Mve*), total liabilities to total assets (*Lev*), and tangible common equity (*Tce*) from Bank Compustat. The variables *Level23, Level1, Inc* and *Tce* are deflated by beginning-of-period total assets.

that mean profitability (net income) did not significantly change over time. This might indicate that banks managers use additional discretions in fair value measurement to avoid recognising fair value losses. As a whole, Table 1 emphasises an increased use of level 2 and 3 estimates in fair value measurement after the relaxation of fair value standards and the need to investigate the effects of such an increase.

Panel A of Table 2 reports the descriptive statistics for the variables used in the test of earnings management. Approximately 10 per cent of the sample just meet or beat analysts' forecasts.[9] The mean value of changes in discretionary fair value assets (ΔDRA) is 0.53, indicating that more than half of the sample experienced an increase in discretionary fair value assets.

Panel B of Table 2 reports the Pearson (Spearman) correlations above (below) the diagonal for the variables in Equation (1). The correlation is positive but insignificant between an increase in discretionary fair value assets *(*ΔDFV) and meeting the earnings benchmark (*EM*).[10] As expected, abnormal loan loss provisions (*ULLP*) are negatively correlated with *EM*.[11] Earnings persistence (*PERSIST*) is positively correlated with *EM*, indicating persistent earnings are easier to forecast. Capital ratios are positively correlated with *EM*, suggesting banks with higher capital adequacy are better performers and more

[9] Most banks experienced negative earnings growth in the sample period due to the impact of the financial crisis. Matsunaga and Park (2001) report 8.3 per cent of companies meeting or beating forecasts for firms with negative growth in earnings.

[10] We also tested the correlation between the levels of these two variables. Specifically, we tested the correlation between the amount in cents of beating or missing analyst forecasts (*AEM*) and the amount of discretionary fair value assets of a bank (*DFV*). The correlation is at 0.014 and insignificant.

[11] The higher value of Spearman correlation between *ULLP* and *POST* than the Pearson correlation indicates the correlations between *ULLP* and *POST* can be better described by a monotonic function using rank scales than parametric values.

often meet earnings targets.[12] As a whole, the relation between discretion in fair value measurement and the probability of meeting earnings targets is unclear from the univariate analyses. It is therefore necessary to further investigate this relation using multivariate analysis.

Panel A of Table 3 reports the descriptive statistics for the variables used in the *ERC* test. *CAR* has close means and medians, which is reasonable for short-window (3 days) cumulative stock returns. The mean and median of unexpected earnings (ΔE) are both negative, showing that most sample banks experience negative earnings growth in the sample period. The mean value of ΔDFV is 0.48, indicating about half of the sample experience an increase in discretionary fair value assets.

Panel B of Table 3 reports the Pearson (Spearman) correlations above (below) the diagonal for the variables in Equation (2). As expected, ΔE is positively correlated with *CAR*. *POST* is positively correlated with both ΔE, showing an increase in unexpected earnings after the relaxation of fair value rules. The correlations between the variables are all below 0.3, indicating that multicollinearity is not a concern. As a whole, the relation between discretion in fair value measurement and the earnings response coefficient is unclear from the univariate analyses. It is necessary to further investigate this relation in the multivariate analyses.

6. Results

[12] The VIF values for all the variables used in Equation (1) are below 3.5, indicating that multi-collinearity is not a concern in this model.

6.1 Results of the Earnings Management Test

Table 4 reports the results of the earnings management test by estimating the Logit model of meeting or beating analyst forecast specified in Equation (1). Because the Hausman test shows there is no significant difference between the random and fixed effect Logit models (Chi-Square = 8.12, P = 0.91), we report the results for both random and fixed effect Logit models based on Equation (1).[13] Both random and fixed effect models include indicator variables for year to take into account time fixed effects, specifically the yearly changes experienced by all banks. Both models have good explanatory power with the likelihood ratios significant at $p < 0.01$. The pseudo R^2 stands at 10 per cent for the Logit model *without* the interaction of $\Delta DFV*POST$, and 11 per cent for the Logit model *with* the interaction of $\Delta DFV*POST$. The average marginal effects of the coefficients are reported in the column beside the coefficients. As the results of the random and fixed effect models in Panel A and B are similar, only the results in Panel A are discussed.

The coefficient on ΔDFV is insignificant in Column 1 (without interaction with *POST*), indicating an increase in discretionary fair value assets is, on average, not significantly associated with the probability of meeting analyst forecast. Turning to Column 2 (interacting *POST* with ΔDFV), the coefficient on ΔDFV remains insignificant, suggesting an increase in discretionary fair value assets is insignificantly associated with the probability

[13] Note that the fixed effect Logit model includes fewer observations. The firms which do not demonstrate enough time variation in the dependent variable are dropped in the statiscal calculations when estimating the coefficients for the fixed effect Logit models.

of meeting analyst forecast before the relaxation of fair value standards. Consistent with H1, the coefficient on the interaction term Δ*DFV*POST* is positive and significant. The average marginal effect of the interaction term is 3.5 per cent. Moreover the sum of the coefficients on Δ*DFV* and Δ*DFV*POST* is significantly positive (Z = 2.12, P = 0.03). The result indicates that the positive association between fair value discretion and meeting earnings target is primarily in the period after the relaxation of fair value standards.

As expected, the coefficient on the value of the loan loss provision (*ULLP)* is significantly negative, as higher loan loss provisions increase expenses and decrease earnings. The coefficient on the earnings persistence (*PERSIST*) is significantly positive, as persistent earnings are easy to forecast accurately and increase the probability of meeting analysts' forecasts. The coefficient on total capital ratio (*CR*) is significantly positive, as higher capital ratios indicate better bank performance and increase the chance of meeting analysts' forecasts.

6.2 Results of the Earnings Informativeness Test

Table 5 reports the results of the earnings informativeness test by estimating the fixed effects *ERC* model specified in Equation (2), i.e., the regression of earnings announcement period returns on unexpected earnings. The Hausman test confirms that the fixed effect model is the preferred approach for the *ERC* model (Chi-Square = 87.74, P < 0.01) over the random effects model. The fixed effects model includes year indicator variables to

account for the yearly changes experienced by all banks. Consistent with Altamuro et al. (2005), the R^2 of the model is at 1 per cent. The low explanatory power is consistent with explaining the earnings announcement return in an industry where there is significant analyst following, publically available interest rate data and other information available prior to the release of earnings.

As expected, the coefficient on unexpected earnings (*ΔE*) is significantly positive, indicating higher unexpected earnings are associated higher earnings announcement period returns. The significant coefficient on *POST* suggests the separation of the time period based on the change of fair value rules has incremental explanatory power over the year dummies for the earnings announcement period returns. The coefficient on *ΔE**Δ*DFV,* which is the effect of fair value assets prior to the relaxation of the rules, is insignificant. The result suggests that discretion in fair value measurement has limited impact on the *ERC* before the relaxation. Consistent with H2, the coefficient on *ΔE**Δ*DFV*POST* is significantly negative, indicating that the impact of managerial discretion in fair value measurement on the earnings response coefficient significantly and negatively increased after the relaxation of fair value standards in 2009 than prior to the relaxation.[14]

6.3 Summary of Results

[14] We also ran the *ERC* regression separately for each year from 2007 to 2010. The coefficient on the change in discretionary fair value assets (DFV) is negative and significant in 2008 and 2010. The coefficient on the interaction of DFV and Earnings is negative and significant in 2009 and 2010.

The results are consistent with both H1 and H2. H1 predicts that managerial discretion in fair value measurement is more positively associated with earnings management after the relaxation of fair value standards in 2009 than prior to the relaxation. Using a fixed effect Logit model, the results indicate that an increase in discretionary fair value assets is associated with a higher probability of meeting earnings target after the relaxation of fair value standards. The result is similar when using a random effect Logit model. The result indicates that greater managerial discretion in fair value measurement leads to more earnings management.

H2 predicts that managerial discretion in fair value measurement more negatively impacts the earnings response coefficient after the relaxation of fair value rules than prior to the relaxation. Using a fixed effect model, the results indicate that an increase in discretionary fair value assets more negatively impacts on the earnings response coefficient after the relaxation of fair value rules than prior to the relaxation. This result indicates that greater managerial discretion in fair value measurement leads to lower earnings informativeness.

Overall, the results suggest that greater managerial discretion in fair value measurement increases the probability of earnings management and negatively affects the reliability of earnings. Consistent with the attribute substitution theory, less reliable fair value measurement also deceases the *ERC*, negatively affecting the relevance and usefulness of earnings to the users of financial statements,.

7. Supplementary Analyses

Because of the small amount of liabilities disclosed at fair value the analysis focuses on the fair value of assets. We also estimated the models using both fair value of assets and liabilities. The results remain similar to those reported and are not sensitive to the inclusion of the fair value of liabilities. Because of the small amount of liabilities disclosed at fair value, no significant relation is found between earnings and the fair value of liabilities alone. The results including fair value liabilities are reported in Table 6. As both random and fixed effect models produce similar results, only the results of the fixed effect Logit model are presented.

Instead of an indicator variable, we also use a continuous variable for the change in discretionary fair value assets. The change in fair value assets potentially has a relation to change in earnings if the changes in fair value of assets are included directly in earnings. If the changes of fair value assets are included in other comprehensive income, there should not be any direct connection with earnings. Fair value changes can be included in other comprehensive income if such changes are considered as temporary. Whether a change is temporary or not is discretionarily determined by managers (FASB 2009b). It is unlikely that there is a one to one relation between changes in fair value assets and earnings, therefore it is conceptually correct to use an indicator variable. Nonetheless, we conduct test using the actual amount of changes in fair value assets. As expected, the results are qualitatively similar but weaker due to the increased noise introduced by large changes in fair

value. The term of Δ*DFV*POST* remains significant only in the ordinary Logit model without year fixed effects. The results are reported in Table 7.

We also add a variable representing the amount of assets recorded at level 2 and 3 in the fair value hierarchy (*DFV*). Then we add the term *DFV*POST*. Adding this additional term could be important because it conveys information on whether *POST* captures the effect of the relaxation of fair value standards or only the time effects. To provide richer information, we also interact *POST* with all the variables except the change of cash flows (*ΔCFO*), which should not be affected by a change in accounting measurement. The results of the additional specifications are reported in Table 8.

Table 8 shows that the term of *DFV*POST* is insignificant in contrast to the term of Δ*DFV*POST*, which continues to be significantly positive. This contrast indicates that *POST* captures the effect of the relaxation of fair value standards rather than only the time effects. Only the term directly related to the relaxation of fair value standards (i.e., Δ*DFV*) is significant after interacting with *POST*. The levels of discretionary fair value assets (*DFV*) and the other controls are not directly related to the relaxation of fair value standards. Therefore their interactions with *POST* remain insignificant. However the multiple interactions with *POST* make the results of the additional test weaker than the main test, as the term of Δ*DFV*POST* remains significant only in the ordinary Logit model with year dummies.

In the *ERC* test, this paper follows Altamuro et al. (2005) and uses seasonally adjusted changes in quarterly earnings. To investigate the robustness of the *ERC* test, the test is replicated using analyst forecast errors deflated by share price at beginning of the quarter or ten days before the earnings announcement date, the results remain qualitatively similar. We also deleted 3-day cumulative returns greater than 30 per cent. The results remain qualitatively similar to those reported. We also use two and five day cumulative market adjusted return around the earnings announcement, the results are qualitatively similar to those reported in the main tests. The market reaction to earnings may experience a structural change post 2009 due to the change in macroeconomy. To control the potential effects of macroeconomic factors and firm characteristics related to macroeconomy, we added size (measured as the natural log of total assets), growth (measured as the market to book ratio) and risk free interest rates (1-year U.S. T-bill rates) to the *ERC* test, the results are reported in the additional column marked 'With additional controls' in Table 5 and remain qualitatively similar.

8. Conclusion

In this study we compare the relations between changes in discretionary fair value assets and earnings prior to and after the relaxation of the application of fair value standards by the FASB. Consistent with the argument of the critics of the relaxation of fair value rules (Bushman and Landsman 2010), we find evidence that increases in discretionary fair value assets are associated

with increased earnings management. Similarly we find that increases in discretionary fair value assets are associated with a lower informativeness of earnings as reflected in a lower earnings response coefficient. We also find that the negative effects of an increase in fair value discretion on earnings mainly come from the period after the relaxation of fair value rules. Our evidence is consistent with the contention of critics that the relaxation of fair value rules facilitates greater managerial discretion that is exploited by managers and adversely affects the quality of financial reporting.

The results of this study provide information of interest to policy makers and regulators by showing the adverse effects of a change in practice of fair value measurement on accounting earnings. This study demonstrates the need to take into consideration the degree of subjectivity of fair value estimates in discussions of the merits and drawbacks of increased use of fair value in the accounting system. As illustrated in Table 1, most assets reported at fair value by financial institutions rely on level 2 and 3 inputs to estimate their value. Our results are generally consistent with the management of financial institutions having incentives to limit the impact of fair value adjustments on reported earnings and capital reserves during the period examined. Such an impact might lead to a deterioration of share prices and undermine stakeholders' confidence in refinancing a bank's regulatory capital under adverse market conditions. Management discretion can serve to dampen the perceived negative impacts of fair value adjustments but at the expense of both reliability and relevance. With the IASB and the FASB promoting increased use of fair value

in practice (Beisland 2013), the results of this study have implications for the controversies and debates surrounding the perceived trade-off between the reliability and relevance of fair value accounting.

The limitations of this type of research design include the inability to directly observe the discretionary component of the fair value estimates. The results must be interpreted with respect to this limitation. Also of concern is that the relaxation of fair value rules is more likely to lead to movements from level 1 to levels 2 and 3, rather than the reverse. The statistical tests are therefore effectively comparing the predicted changes against a null of no effect, as it is highly unlikely that managers would reclassify securities upward from levels 2 and 3 to level 1 following the granting of increased discretion.

A limitation of this study also lies in the difficulty of substantiating arguments about the relationship between value and information. As pointed out in Dechow et al. (2010a), the *ERC* captures the overall quality of earnings but does not distinguish between the contributions of fundamental performance, and the accounting system that measures fundamental performance, to overall decision usefulness. Moreover, while the exact nature of the relation between investor responsiveness to earnings is disclosure specific, non-earnings information (such as information environment) can have potential influence on how investors respond to information content in earnings.

Future research is needed to examine the impact of the relaxation of fair value rules on analysts' forecasts, valuation and capital disclosures over

longer time periods where data permits, and research using qualitative and other methods is needed to better understand the relations between incentives, ethics and the extent of opportunistic management behaviour with respect to the preparation of fair value estimates.

REFERENCES

Altamuro, J., Beatty, A. L., & Weber, J. (2005). The effects of accelerated revenue recognition on earnings management and earnings informativeness: Evidence from SEC Staff Accounting Bulletin No. 101. *Accounting Review*, 80, 373–401.

Ayers, B. C., Jiang, J. X., & Yeung, P. E. (2006). Discretionary accruals and earnings management: An analysis of pseudo earnings target. *Accounting Review*, 81, 617–652.

Barth, M.E., Beaver, W. H., Hand, J. R. M., & Landsman, W. R. (2001). The relevance of value relevance literature for financial accounting standard setting: another view. *Journal of Accounting & Economics* 31, 77–104.

Barth, M. E., & Taylor, D. J. (2010). In defence of fair value: Weighing the evidence on earnings management and asset securitizations. *Journal of Accounting & Economics*, 49, 26–33.

Beisland, L.A. (2013). Equity valuation in practice: the influence of net financial expenses. *Accounting Forum*, forthcoming.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting & Economics*, 24, 99–126.

Bischof, J., Brüggemann, U., & Daske, H. (2011). Fair value reclassifications of financial assets during the financial crisis. Working paper, University of Mannheim and Humboldt University of Berlin.

Bushman, R. M. & Landsman, W. R. (2010). The pros and cons of regulating corporate reporting: A critical review of the arguments. *Accounting & Business Research*, 40, 259–273.

Davis, L.R., Soo, B.S., & Trompeter, G.M. (2009). Auditor tenure and the ability to meet or beat earnings forecasts. *Contemporary Accounting Research*, 26, 517–548.

Dechow, P. M., Ge, W., & Schrand, C. (2010a). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting & Economics*, 50, 344–401.

Dechow, P. M., Myers, L. A., & Shakespeare, C. (2010b). Fair value accounting and gains from asset securitizations: A convenient earnings management tool with compensation side-benefits. *Journal of Accounting & Economics*, 49, 2–25.

Degeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings management to exceed thresholds. *Journal of Business*, 72, 1–33.

Fiecher, P., & Meyer, C. (2010). Discretion in fair value measurement of banks during the 2008 financial crisis. Working paper, University of Zurich.

Financial Accounting Standards Board (FASB). (2006). *Fair Value Measurements*. Statement of Financial Accounting Standards No. 166. Norwalk,CT: FASB.

Financial Accounting Standards Board (FASB). (2009a). FASB Staff Position No. FAS 157-4, *Determing Fair Value When the Volume and Activity for*

the Asset or Liability Have Significantly Decreased and Identifying Transactions That Are Not Orderly. Norwalk,CT: FASB.

Financial Accounting Standards Board (FASB). (2009b). FASB Staff Position No. FAS 115-2 and FAS 124-2, *Recognititon and Presentation of Other-Than-Temporary Impairments.* Norwalk,CT: FASB.

Financial Accounting Standards Board (FASB). (2009c). FASB Staff Position No. FAS 107-1 and APB 28-1, *Interim Disclosures about Fair Value of Financial Instruments.* Norwalk,CT: FASB.

Gwilliam, D., & Jackson, R. (2008). Fair value in financial reporting: Problems and pitfalls in practice a case study analysis of the use of fair valuation at Enron. *Accounting Forum*, 32, 240-259.

Hausman, J. (1978). Specification tests in econometrics. *Econometrica*, 46, 1251–1271.

Heilpern, E., Haslam, C., & Anderson, T. (2009). When it comes to the crunch: What are the drivers of the US banking crisis? *Accounting Forum* 33, 99–113.

Hernández Hernández, F.G. (2004). Another step towards full fair value accounting for financial instruments. *Accounting Forum*, 28, 167–179.

Herrmann, D., Saudagaran, S.M., & Thomas, W.B. (2006). The quality of fair value measurement for property, plant and equipment. *Accounting Forum* 30, 43–59.

Huizinga, H., & Laeven, L. (2009). Accounting discretion of banks during a financial crisis. Working paper, Tilburg University and International Monetary Fund (IMF).

Kadous, K., Koonce, L., and Thayer, J.M. (2012). Do financial statement users judge relevance based on properties of reliability? *Accounting Review* 87, 1335−1356.

Kahneman, D., and Frederick. S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, and D. Kahneman, In, *Heuristics and Biases: The Psychology of Intuitive Judgment*, pp. 49–81. New York: Cambridge University Press.

Kanagaretnam, K., Krishnan, G., & Lobo, G. J. (2010). An empirical analysis of auditor independence in the banking industry. *Accounting Review*, 85, 2011–2046.

Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations & Society*, 34, 826–834.

Laux, C., & Leuz, C. (2010). Did fair-value accounting contribute to the financial crisis? *Journal of Economic Perspectives*, 24, 93–118.

Liu, C. L., Ryan, S. G., & Wahlen, J. M. (1997). Differential valuation implications of loan loss provisions across banks and fiscal quarters. *Accounting Review*, 72, 133–146.

McVay, S., Nagar, V., & Tang, V. W. (2006). Trading incentives to meet analyst forecast. *Review of Accounting Studies*, 11, 575–598.

Matsunaga, S. R., & Park, C. W. (2001). The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *Accounting Review*, 76, 313–332.

Payne, J. L. (2008). The influence of audit firm specialization on analysts' forecast errors. *Auditing: A Journal of Practice & Theory*, 27, 109-136.

Penman, S. H. (2007). Financial reporting quality: is fair value a plus or a minus? *Accounting & Business Research* Special Issue of International Accounting Policy Forum, 33–44.

Phillips, J., Pincus, M., & Rego, S. O. (2003). Earnings management: New evidence based on deferred tax expense. *Accounting Review*, 78, 491–521.

Pulliam, S., & McGinty, T. (2009). Congress helped banks defang key rule. *Wall Street Journal*, June 3, 2009. Available at: http://online.wsj.com/article/.

Vyas, D. (2010). The timeliness of accounting write-downs by US financial institutions during the financial crisis of 2007–2008. *Journal of Accounting Research*, 49, 823–860.

Wahlen, J. M. (1994). The nature of information in commercial bank loan loss disclosures. *Accounting Review*, 69, 455–478.

Table 1
Differences in Mean and Median Values of Main Bank Characteristics of Interest for Pre and Post the Relaxation of Fair Value Rules

		Before Relaxation of Fair Value Rule		Post Relaxation of Fair Value Rule		*t*-test	Wilcoxon
Variable	**N**	**Mean**	**Median**	**Mean**	**Median**	***p*-value***	***p*-value ***
Level23	7,306	0.1510	0.1355	0.1719	0.1584	<.0001	<.0001
Level1	7,306	0.0121	0.0003	0.0083	0.0001	<.0001	0.0008
Inc	7,306	− 0.0007	0.0012	− 0.0007	0.0010	0.8244	0.0092
Size	7,306	7.4458	7.1218	7.4087	7.1253	0.3093	0.7458
Mve	7,306	4.8351	4.5074	4.6399	4.2819	<.0001	<.0001
Lev	7,306	0.9039	0.9094	0.8992	0.9037	<.0001	<.0001
Tce	7,306	0.0765	0.0697	0.0811	0.0762	0.0010	<.0001

This table reports differences in means and medians of variables before and after the relaxation of fair value rule in Q2 2009. The sample used in the table consists of all banks with fair value hierarchy disclosures between 2007 and 2011 collected from Bank Compustat with non-missing values for the variables in the table. *T*-test (Wilcoxon) *p*-values test for differences in means (medians) for before and after Q2 2009.

*: *P*-value is probability > |t| for differences of means and probability > |Z| for differences of Wilcoxon median scores (rank sums).

Variable Definitions:

Level23: sum of fair value assets disclosed at level 2 and 3, deflated by beginning of quarter total assets;

Level1: fair value assets disclosed at level 1, deflated by beginning of quarter total assets;

Inc: net income before extraordinary items, deflated by beginning of quarter total assets;

Size: natural log of total assets;

Mve: natural log of market value of equity;

Lev: total liabilities over total assets;

Tce: common equity minus intangible assets, deflated by beginning of quarter total assets.

Table 2

Descriptive Statistics and Correlations for Meeting Earnings Target Test

Panel A: Descriptive Statistics

Variable	N	Mean	Min.	Median	Max.	Std. Dev.
EM	3,431	0.096	0.000	0.000	1.000	0.294
Δ*DFV*	3,431	0.530	0.000	1.000	1.000	0.499
POST	3,431	0.719	0.000	1.000	1.000	0.450
ULLP	3,431	-0.018	-0.335	-0.041	0.929	0.152
ΔCFO	3,431	0.001	-0.051	0.001	0.062	0.014
SIZE	3,431	8.131	5.861	7.781	14.034	1.478
BM	3,431	1.366	0.341	1.070	5.372	0.919
DISPERS	3,431	0.088	0.000	0.020	2.550	0.312
NUMEST	3,431	5.608	1.000	3.000	38.000	5.970
CHGINC	3,431	-0.002	-10.464	0.000	7.581	0.399
PERSIST	3,431	0.349	0.000	0.000	1.000	0.477
CR1	3,431	0.120	0.000	0.117	0.316	0.033
CR	3,431	0.147	0.001	0.140	0.458	0.043

Panel B: Correlations

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*
(1)EM	1	0.020	0.030	0.007	0.022	**-0.071**	-0.011	0.014	**-0.118**	0.032	**-0.064**	0.006	**0.218**	**0.086**	**0.159**
(2)AEM	0.024	1	**0.042**	0.014	-0.005	**-0.214**	0.005	-0.016	**-0.070**	0.027	**-0.294**	**0.177**	**0.044**	**0.076**	**0.056**
(3)ΔDFV	0.030	**0.040**	1	**0.151**	**0.033**	**-0.042**	0.002	-0.008	-0.033	0.008	-0.021	0.026	**0.046**	**0.075**	**0.049**
(4)DFV	0.027	**0.155**	**0.188**	1	**0.086**	**-0.052**	**0.063**	**0.344**	**-0.186**	**0.195**	**-0.036**	0.022	**0.111**	**0.196**	**0.201**
(5)POST	0.022	**0.203**	**0.033**	**0.122**	1	**-0.043**	**0.056**	-0.032	**-0.045**	**0.041**	**-0.069**	0.008	**0.056**	**0.232**	**0.246**
(6)ULLP	**-0.057**	**-0.359**	**-0.044**	-0.005	**-0.225**	1	**-0.100**	**0.069**	**0.291**	-0.013	**0.283**	**-0.160**	**-0.167**	**-0.258**	**-0.213**
(7)ΔCFO	0.010	**0.038**	0.023	**0.058**	**0.072**	**-0.129**	1	**0.080**	**-0.041**	**0.044**	0.032	0.009	0.008	0.024	**0.039**
(8)SIZE	0.032	**0.074**	-0.007	**0.179**	-0.026	**0.208**	**0.077**	1	**-0.136**	**0.831**	**0.108**	0.005	**0.051**	**-0.071**	0.002
(9)BM	**-0.110**	**-0.150**	-0.026	**-0.232**	0.000	**0.085**	**-0.062**	**-0.263**	1	**-0.171**	**0.261**	**-0.043**	**-0.340**	**-0.244**	**-0.249**
(10)NUMEST	**0.061**	**0.085**	0.029	**0.111**	-0.002	**0.150**	**0.065**	**0.789**	**-0.231**	1	0.021	0.001	**0.077**	0.024	**0.050**
(11)DISPERS	**-0.083**	-0.005	0.007	**0.035**	-0.026	**0.244**	**0.034**	**0.514**	**0.049**	**0.653**	1	0.008	**-0.138**	**-0.127**	**-0.129**
(12)CHGINC	0.031	**0.559**	**0.034**	**0.048**	**0.121**	**-0.251**	0.016	0.032	0.005	**0.037**	0.000	1	0.004	**0.041**	0.031
(13)PERSIST	**0.218**	**0.164**	**0.046**	**0.145**	**0.056**	**-0.177**	**0.039**	**0.068**	**-0.400**	**0.085**	**-0.145**	**0.035**	1	**0.164**	**0.213**
(14)CR1	**0.061**	**0.208**	**0.092**	**0.244**	**0.270**	**-0.164**	**0.042**	-0.031	**-0.216**	**0.073**	0.001	**0.109**	**0.169**	1	**0.709**
(15)CR	**0.115**	**0.240**	**0.091**	**0.297**	**0.355**	**-0.186**	**0.079**	**0.092**	**-0.243**	**0.144**	-0.016	**0.123**	**0.217**	**0.780**	1

Panel A reports the descriptive statistics of the variables used in Equation (1). Panel B reports Pearson (Spearman) correlations of the variables used in Equation (1) above (below) the diagonal. The number of observations is 3,431. Correlations significant at the 5 per cent level in a two tailed test are in boldface.

Variable Definitions:

EM: 1 if bank i's quarter q analysts' earnings forecast error is from zero to 1 cent per share, and 0 otherwise;

AEM: the amount of analysts' earnings forecast error; analyst forecast error is defined as actual earnings per share as reported by I/B/E/S less the median of the last analyst forecasts after the previous quarter's earnings announcement and before the current quarter's earnings announcement;

ΔDFV: indicator variable equal to 1 if the discretionary fair value assets increased from quarter q-1 to quarter q, and 0 otherwise; discretionary fair value assets are defined as the sum of fair value assets measured at level 2 and 3;

DFV: the amount of discretionary fair value assets; discretionary fair value assets are defined as the sum of fair value assets measured at level 2 and 3;

POST:	indicator variable equal to 1 if the bank-quarter observation occurs during the post relaxation period of fair value rule, and 0 otherwise.
ULLP:	unexpected loan loss provisions in quarter q, estimated following the procedures in Wahlen (1994);
ΔCFO:	change in bank i's cash flows from continuing operations from q-1 to q, scaled by total assets at the beginning of quarter q;
SIZE:	size of the bank, estimated as the natural log of total assets;
BM:	market to book ratio, estimated as the book value of equity over the market value of equity;
DISPERS:	analyst forecast dispersion, measured as the standard deviation of analyst earnings forecast;
NUMEST:	analyst coverage, measured as the number of analysts covering the bank;
CHGINC:	change in earnings, estimated as the change in bank i's earnings per share from quarter q-1 to quarter q deflated by the bank's share price at the beginning of quarter q;
PERSIST:	earnings persistence, measured as an indicator variable equal to 1 if the bank is within middle three quintiles of the distribution of *CHGINC* and 0 otherwise;
CR1:	tier 1 capital ratio;
CR:	total capital ratio;

Table 3
Descriptive Statistics and Correlations for Earnings Response Coefficient Test

Panel A: Descriptive Statistics

Variable	Mean	Min.	Median	Max.	Std. Dev.
CAR	0.004	– 0.329	0.001	0.346	0.109
ΔE	– 0.187	– 5.409	– 0.036	4.264	1.020
Δ*DFV*	0.476	0.000	0.000	1.000	---
POST	0.569	0.000	1.000	1.000	---

Panel B: Correlations

	N	*CAR*	*ΔE*	Δ*DFV*	*POST*
CAR	4,148	1	**0.106**	– 0.010	0.008
ΔE	4,148	**0.134**	1	0.027	**0.148**
Δ*DFV*	4,148	– 0.012	0.011	1	– 0.012
POST	4,148	0.021	**0.226**	– 0.012	1

Panel A reports the descriptive statistics of the variables used in Equation (2). Panel B reports Pearson (Spearman) correlations of the variables used in Equation (2) above (below) the diagonal. Correlations significant at the 5 per cent level in a two tailed test are in boldface.

Variable Definitions:

CAR = cumulative market-adjusted returns (raw return minus the value-weighted market index), inclusive of dividends and other distributions computed over the three-day window surrounding the earnings announcement beginning one day before and one day after the quarter earnings announcement;

ΔE = unexpected earnings, measured as the seasonally adjusted change in net income for bank i, scaled by end-of-period shares outstanding;

Δ*DFV* = indicator variable equal to 1 if the discretionary fair value assets increased from quarter q-1 to quarter q, and 0 otherwise; discretionary fair value assets are defined as the sum of fair value assets measured at level 2 and 3;

POST = indicator variable equal to 1 if the bank-quarter observation occurs during the post relaxation period of fair value rule, and 0 otherwise.

Table 4

Logit Regression Results for Meeting Earnings Target (*EM* Test)

$$EM_q = \gamma_0 + \gamma_1 POST + \gamma_2 \Delta DFV_q + \gamma_3 \Delta DFV_q * POST + \gamma_4 ULLP_q + \gamma_5 \Delta CFO_q + \gamma_6 SIZE_{q-1} + \gamma_7 BM_{q-1} + \gamma_8 DISPERS_q + \gamma_9 NUMEST_q + \gamma_{10} CHGINC_q + \gamma_{11} PERSIST_q + \gamma_{12} CR1_q + \gamma_{13} CR_q + \varepsilon_q \quad (1)$$

Panel A: Random Effect Logit Model

Variable	**Predicted Sign**	Without interaction with *POST*	Marginal Prob.	Interacting *POST* with Δ*DRA*	Marginal Prob.
Intercept		– 3.444***		– 3.209***	
		(– 4.14)		(– 3.84)	
POST	? , ?	0.354	0.017	0.009	0.001
		(1.07)		(0.02)	
Δ*DFV*	+ , ?	0.156	0.008	– 0.303	– 0.016
		(1.20)		(– 1.20)	
Δ*DFV***POST*	+			0.625**	0.035
				(2.13)	
ULLP	– , –	– 2.119**	– 0.109	– 2.093***	– 0.107
		(– 2.06)		(– 2.03)	
ΔCFO	– , –	– 5.367	– 0.276	– 4.895	– 0.251
		(– 1.12)		(– 1.02)	
SIZE	? , ?	– 0.034	– 0.002	– 0.033	– 0.002
		(– 0.36)		(– 0.35)	
BM	– , –	– 0.158	– 0.010	– 0.199	– 0.010
		(– 1.50)		(– 1.51)	
DISPERS	– , –	– 1.733	– 0.089	– 1.763	– 0.090
		(– 1.49)		(– 1.50)	
NUMEST	? , ?	0.022	0.001	0.022	0.001
		(1.01)		(1.02)	
CHGINC	+ , +	0.087	0.004	0.082	0.004
		(0.21)		(0.20)	
PERSIST	+ , +	1.131***	0.070	1.133***	0.070
		(7.92)		(7.93)	
CR1	+ , +	– 1.716	– 0.088	– 1.986	– 0.102
		(– 0.61)		(– 0.71)	
CR	+ , +	7.821***	0.402	7.937***	0.407
		(4.21)		(4.30)	
Year Fixed Effects		Yes	Yes	Yes	Yes

Log Likelihood	– 958.03		– 955.76	
# Observations	3431	3431	3431	3431

Panel B: Fixed Effect Logit Model

Variable	**Predicted Sign**	Without interaction with *POST*	Marginal Prob.	Interacting *POST* with Δ*DRA*	Marginal Prob.
POST	? , ?	0.077	0.017	– 0.454	– 0.113
		(0.25)		(– 1.14)	
Δ*DFV*	+ , ?	0.195	0.043	– 0.543	– 0.135
		(0.88)		(– 1.29)	
Δ*DFV***POST*	+			1.037**	0.254
				(2.07)	
ULLP	– , –	– 1.188	– 0.261	– 0.784	– 0.196
		(– 0.28)		(– 0.18)	
ΔCFO	– , –	– 3.326	– 0.733	– 1.634	– 0.408
		(– 0.50)		(– 0.24)	
SIZE	? , ?	– 0.185	– 0.041	– 0.050	– 0.012
		(– 0.17)		(– 0.05)	
BM	– , –	– 0.371	– 0.082	– 0.434	– 0.108
		(– 0.67)		(– 0.76)	
DISPERS	– , –	– 5.515	– 1.214	– 6.078	– 1.518
		(– 0.87)		(– 0.94)	
NUMEST	? , ?	0.049	0.011	0.054	0.013
		(0.58)		(0.63)	
CHGINC	+ , +	4.806	1.059	5.042	1.259
		(1.39)		(1.44)	
PERSIST	+ , +	0.935***	0.200	0.926***	0.227
		(3.89)		(3.83)	
CR1	+ , +	– 15.278	– 3.365	– 15.393	– 3.845
		(– 1.24)		(– 1.24)	
CR	+ , +	12.939	2.849	12.738	3.182
		(1.35)		(1.30)	
Firm Fixed Effects		Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes
Log Likelihood		– 214.79		– 212.59	
# Observations		471	471	471	471

*,**,*** Indicates statistical significance at the 0.10, 0.05 and 0.01 levels, respectively, under two-tailed tests.

Table 4 reports Logit regression estimates of Equation (1). Column 1 reports the results for Equation (1) without interaction with *POST*. Column 3 reports the regression results of Equation (1) when interacting Δ*DRA* with *POST*. Average marginal effects are reported in the column beside the coefficients.

Reported are the coefficients from models using robust standard errors clustered by firm; z-statistics are in parentheses.
The variables are defined in Table 2.

Table 5
Regression Results for Earnings Response Coefficient (*ERC* Test)

$$CAR_t = \lambda_0 + \lambda_1 POST + \lambda_2 \Delta E_q + \lambda_3 \Delta DFV_q + \lambda_4 \Delta E_q * POST + \lambda_5 \Delta E_q * \Delta DFV_q + \lambda_6 \Delta E_q * \Delta DFV_q * POST + \varepsilon_q \quad (2)$$

Variable	Predicted Sign	Fixed Effect Model	With additional controls
Intercept		– 0.017	0.202***
		(– 1.49)	(2.96)
POST	?	0.014***	0.012***
		(3.49)	(2.64)
ΔE	+	0.008***	0.008***
		(4.05)	(3.88)
Δ*DFV*	–	– 0.001	– 0.001
		(– 0.59)	(– 0.42)
*ΔE*POST*	?	– 0.002	– 0.001
		(– 0.75)	(– 0.66)
*ΔE*ΔDFV*	–	0.003	0.003
		(1.22)	(1.14)
*ΔE*ΔDFV*POST*	–	– 0.007**	– 0.007**
		(– 2.03)	(– 1.96)
SIZE	–		– 0.029***
			(– 3.22)
MTB	–		– 0.001
			(– 0.48)
RATE	–		– 0.001
			(– 1.63)
Firm Fixed Effects		Yes	Yes
Year Fixed Effects		Yes	Yes
Adj. R^2		0.014	0.015
# Observations		4148	4148

*,**,*** Indicates statistical significance at the 0.10, 0.05 and 0.01 levels, respectively, under two-tailed tests.
Table 5 reports the fixed effect model results for Equation (2). t-statistics are in parentheses using robust standard errors clustered by firm. The variables are as defined in Table 3. The additional variables included are:

SIZE = natural log of total assets.
MTB = market to book ratio.
RATE = risk-free interest rate, equivalent to one-year US T-bill rate.
The other variables are defined in Table 3.

Table 6

Logit Regression Results for Meeting Earnings Target: Including Discretionary Fair Value Liabilities (Δ*DFL*)

Dependent Variable = *EM*

Variable	Predicted Sign	Without interaction with *POST*	Marginal Prob.	Interacting *POST* with Δ*DRA*	Marginal Prob.
POST	? , ?	0.079	0.016	– 0.342	– 0.033
		(0.26)		(– 0.84)	
Δ*DFV*	+ , ?	0.190	0.038	– 0.637	– 0.060
		(0.85)		(– 0.84)	
Δ*DFV*POST*	+			1.037**	0.112
				(2.24)	
Δ*DFL*	– , ?	0.077	0.016	0.802	0.089
		-0.230		-1.340	
Δ*DFL*POST*	–			– 0.918	– 0.065
				(– 1.40)	
ULLP	– , –	– 1.147	– 0.228	– 0.500	– 0.046
		(– 0.27)		(– 0.11)	
ΔCFO	– , –	– 3.377	– 0.673	– 1.311	– 0.120
		(– 0.51)		(– 0.19)	
SIZE	? , ?	– 0.216	– 0.043	– 0.332	– 0.030
		(– 0.20)		(– 0.30)	
BM	– , –	– 0.373	– 0.074	– 0.449	– 0.041
		(– 0.67)		(– 0.78)	
DISPERS	– , –	– 5.549	– 1.105	– 6.752	– 0.616
		(– 0.88)		(– 1.03)	
NUMEST	? ,?	0.047	0.009	0.082	0.007
		(0.56)		(0.93)	
CHGINC	+ , +	4.785	0.953	5.015	0.458
		(1.39)		(1.43)	
PERSIST	+ , +	0.936***	0.181	0.920***	0.082
		(3.90)		(3.79)	
CR1	+ , +	– 15.351	– 3.058	– 16.295	– 1.448
		(– 1.25)		(– 1.30)	
CR	+ , +	13.013	2.592	13.460	1.229
		(1.35)		(1.36)	
Firm Fixed Effects		Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes

Log Likelihood	– 214.77		– 211.59	
# Observations	471	471	471	471

*,**,*** Indicates statistical significance at the 0.10, 0.05 and 0.01 levels, respectively, under two-tailed tests.

Table 6 reports fixed effect Logit regression results of Equation (1) with the additional variable of Δ*DFL*. Column 1 reports the regression results of the base version of Equation (1) without interaction with *POST*. Column 3 reports the regression results of Equation (1) when interacting Δ*DFV* and Δ*DFL* with *POST*. Average marginal effects are reported in the column beside the coefficients.

Reported are the coefficients from models using robust standard errors clustered by firm; z-statistics are in parentheses.

Δ*DFL* = indicator variable equal to 1 if the discretionary fair value liabilities increased from quarter q-1 to quarter q, and 0 otherwise; discretionary fair value liabilities are defined as the sum of fair value liabilities measured at level 2 and 3.

The other variables are defined in Table 2.

Table 7

Logit Regression Results for Meeting Earnings Target: Actual Amount of Change in Discretionary Fair Value Assets (*DDFV*)

Dependent Variable = *EM*

Variable	**Predicted Sign**	Without interaction with *POST*	Marginal Prob.	Interacting *POST* with Δ*DRA*	Marginal Prob.
Intercept		– 3.089***		– 3.087***	
		(– 4.08)		(– 4.09)	
POST	? , ?	0.309	0.025	0.271	0.021
		(0.93)		(0.81)	
DDFV	+ , ?	0.313	0.025	– 4.298	– 0.344
		(0.21)		(– 1.30)	
*DDFV*POST*	+			6.689*	0.536
				(1.79)	
ULLP	– , –	– 1.955***	– 0.157	– 1.949***	– 0.156
		(– 2.68)		(– 2.67)	
ΔCFO	– , –	– 5.896	– 0.473	– 5.597	– 0.448
		(– 1.18)		(– 1.13)	
SIZE	? , ?	– 0.012	– 0.001	– 0.009	– 0.001
		(– 0.14)		(– 0.10)	
BM	– , –	– 0.199	– 0.016	– 0.195	– 0.016
		(– 1.60)		(– 1.56)	
DISPERS	– , –	– 2.622	– 0.210	– 2.595	– 0.208
		(– 0.97)		(– 0.97)	
NUMEST	? , ?	0.017	0.001	0.017	0.001
		(0.81)		(0.80)	
CHGINC	+ , +	0.092	0.007	0.090	0.007
		(0.46)		(0.45)	
PERSIST	+ , +	1.107***	0.089	1.115***	0.089
		(7.49)		(7.54)	
CR1	+ , +	– 2.866	– 0.230	– 2.921	– 0.234
		(– 1.09)		(– 1.10)	
CR	+ , +	7.438***	0.596	7.466***	0.598
		(4.77)		(4.75)	
Year Fixed Effects		Yes	Yes	Yes	Yes
Log Likelihood		– 965.22		– 967.53	
# Observations		3431	3431	3431	3431

*,**,*** Indicates statistical significance at the 0.10, 0.05 and 0.01 levels, respectively, under two-tailed tests.

Table 7 reports Logit regression results of Equation (1) using actual amount of increase in discretionary fair value assets. Column 1 reports the regression results of the base version of Equation (1) without interaction with *POST*. Column 3 reports the regression results of Equation (1) when interacting *DDFV* with *POST*. Average marginal effects are reported in the column beside the coefficients.

Reported are the coefficients from models using robust standard errors clustered by firm; z-statistics are in parentheses.

DDFV = the amount of change in discretionary (level 2 & 3) fair value assets deflated by total assets at the beginning of the quarter.
The other variables are defined in Table 2.

Table 8
Logit Regression Results for Meeting Earnings Target: Extended Model
Dependent Variable = *EM*

Variable	Predicted Sign	Without interaction with *POST*	Marginal Prob.	Interacting *POST* with Δ*DRA*	Marginal Prob.
Intercept		– 3.526***		– 1.376	
		(– 4.52)		(– 0.85)	
POST	? , ?	0.323	0.026	– 2.767	– 0.220
		(0.97)		(– 1.47)	
ΔCFO	– , –	– 5.858	– 0.468	– 4.864	– 0.387
		(– 1.16)		(– 0.93)	
Δ*DFV*	+ , ?	0.198*	0.016	– 0.296	– 0.024
		(1.68)		(– 1.25)	
Δ*DFV***POST*	+			0.680***	0.054
				(2.54)	
DFV	? , ?	– 1.369**	– 0.109	– 0.748	– 0.059
		(– 2.06)		(– 0.52)	
*DFV***POST*	+			– 0.784	– 0.062
				(– 0.52)	
ULLP	– , –	– 1.811***	– 0.145	– 4.963**	– 0.395
		(– 2.58)		(– 1.95)	
*ULLP***POST*	?			3.340	0.266
				(1.22)	
SIZE	? , ?	0.051	0.004	– 0.191	– 0.015
		(0.56)		(– 1.09)	
*SIZE***POST*	?			0.332	0.026
				(1.64)	
BM	– , –	– 0.217*	– 0.017	– 0.215	– 0.017
		(– 1.72)		(– 0.88)	
*BM***POST*	?			0.011	0.001
				(0.04)	
DISPERS	– , –	– 2.664	– 0.213	– 1.248	– 0.099
		(– 1.01)		(– 0.63)	
*DISPERS***POST*	?			– 3.347	– 0.266
				(– 0.84)	
NUMEST	? , ?	0.008	0.001	0.066	0.005
		(0.41)		1.45	
*NUMEST***POST*	?			– 0.071	– 0.005
				(– 1.48)	
CHGINC	+ , +	0.099	0.008	0.281	0.022
		(0.51)		(0.40)	

*CHGINC*POST*	?			– 0.172	– 0.014
				(– 0.23)	
PERSIST	+ , +	1.114***	0.089	0.946***	0.075
		(7.59)		(3.61)	
*PERSIST*POST*	?			0.204	0.016
				(0.66)	
CR1	+ , +	– 2.139	– 0.171	– 2.332	– 0.185
		(– 0.79)		(– 0.33)	
*CR1*POST*	?			0.608	0.048
				(0.08)	
CR	+ , +	7.602***	0.608	4.754	0.378
		(4.76)		(1.46)	
*CR*POST*	?			3.524	0.280
				(0.89)	
Year Fixed Effects		Yes	Yes	Yes	Yes
Log Likelihood		– 965.22		– 958.49	
# Observations		3431	3431	3431	3431

*,**,*** Indicates statistical significance at the 0.10, 0.05 and 0.01 levels, respectively, under two-tailed tests.

Table 8 reports Logit regression results of Equation (1). Column 1 reports the regression results of the base version of Equation (1) without interaction with *POST*. Column 3 reports the regression results of Equation (1) when interacting the variables with *POST*. Average marginal effects are reported in the column beside the coefficients.

Reported are the coefficients from models using robust standard errors clustered by firm; z-statistics are in parentheses.

The variables are defined in Table 2.